

ABSTRACT OF THE DISCLOSURE

Composite materials that can be used to block radiation of a selected wavelength range or provide highly pure colors are disclosed. The materials include dispersions of

5 particles that exhibit optical resonance behavior, resulting in the radiation absorption cross-sections that substantially exceed the particles' geometric cross-sections. The particles are preferably manufactured as uniform nanosize encapsulated spheres, and dispersed evenly within a carrier material. Either the inner core or the outer shell of the

10 particles comprises a conducting material exhibiting plasmon (Froehlich) resonance in a desired spectral band. The large absorption cross-sections ensure that a relatively small volume of particles will render the composite material fully opaque (or nearly so) to incident radiation of the resonance wavelength, blocking harmful radiation or producing highly pure colors. The materials of the present invention can be used in manufacturing ink, paints, lotions, gels, films, textiles and other solids having desired color properties.

15 The materials of the present invention can be used in systems consisting of reflecting substances such as paper or transparent support such as plastic or glass films. The particles can be further embedded in transparent plastic or glass beads to ensure a minimal distance between the particles.